

LEARNING TOGETHER ABOUT CONNECTING ABSTRACT AND CONCRETE REPRESENTATIONS OF CONCEPTS

Purpose	Trainers, coaches, and expert teachers are encouraged to use this tool to provide in-service training on strategies for connecting abstract and concrete representations of concepts. During this session, teachers will work in the larger group and in small groups to deepen their understanding of instructional strategies and practices.
Materials	Laptop and projector <i>Planning Chart Activity: Incorporating More Concrete Connections to Abstract Concepts</i>
Media	<i>Connecting Abstract and Concrete Representations of Concepts.</i> Watch this multimedia overview to learn about how making connections between abstract and concrete representations improves student learning. (5:44) <i>Using Concrete Situations to Introduce Content.</i> Watch this expert interview with Dr. Brian A. Bottge to learn about the benefits of introducing content through concrete experiences, situations, and problem scenarios. (5:42)
Topic	How to Organize Your Teaching
Practice	Abstract-Concrete Connections

Learning Together About Making Concrete Connections

Hand out the discussion questions below before viewing. Watch the multimedia presentation, *Connecting Abstract and Concrete Representations of Concepts* and the expert interview, *Key Concepts in Alternating Worked Examples with Practice*. Clarify the team's understanding about making concrete connections by asking them to reflect on these questions:

- How does making connections between abstract and concrete concepts impact student learning?
- What are some examples of the ways in which teachers can help their students see the relevant and shared components of abstract and concrete representations?
- What are some of the drawbacks in using only concrete or only abstract representations?
- In his interview, Dr. Bottge mentions that concrete connections can help students form mental models of abstract ideas. How would you define “mental models”? What are some of the ways you help your students form mental models of difficult concepts?
- In his interview, Dr. Bottge demonstrates how fractions can be taught using paper strips. What features of this activity might support students' learning about fractions?

In small groups, discuss the benefits and limitations of the three approaches mentioned in the multimedia presentation: real-life contexts, hands-on learning, and multiple representations (including visuals). In small groups, have teachers brainstorm some ways, large and small, they already help their students to transfer their learning to new contexts.

Ask teachers to think about and write notes about where in their curriculum they could make more concrete connections to important abstract concepts. Form groups of 3–4 teachers and use the tool, *Planning Chart Activity: Incorporating More Concrete Connections to Abstract Concepts*, to brainstorm ways of revising current curriculum to reflect this approach.